FIG. 1

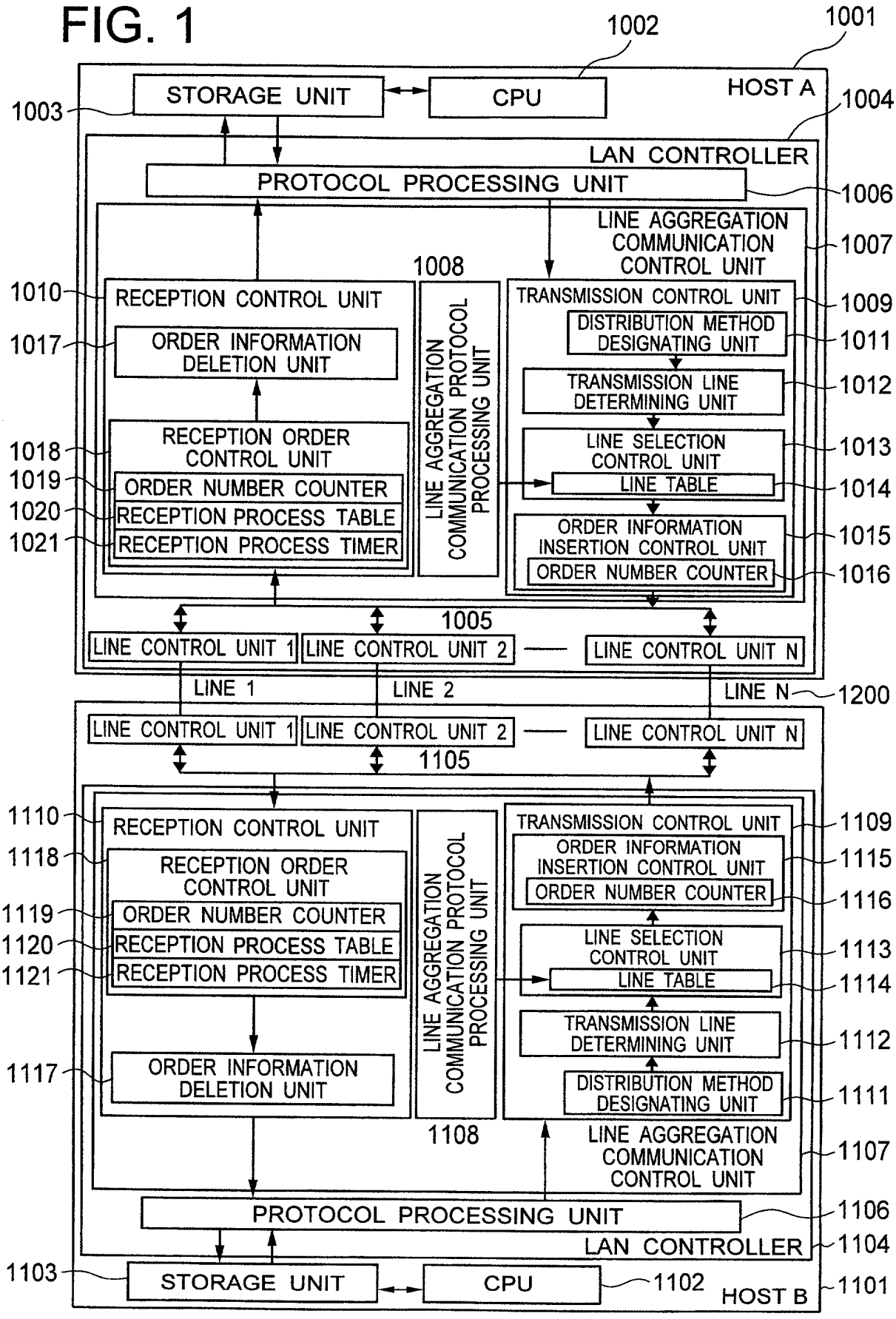

1001
1002
HOST A
STORAGE UNIT
CPU
1003
1004
LAN CONTROLLER
PROTOCOL PROCESSING UNIT
1006
LINE AGGREGATION COMMUNICATION CONTROL UNIT
1007
1008
1010
RECEPTION CONTROL UNIT
1017
ORDER INFORMATION DELETION UNIT
1018
RECEPTION ORDER CONTROL UNIT
1019
ORDER NUMBER COUNTER
1020
RECEPTION PROCESS TABLE
1021
RECEPTION PROCESS TIMER
LINE AGGREGATION COMMUNICATION PROTOCOL PROCESSING UNIT
TRANSMISSION CONTROL UNIT
1009
DISTRIBUTION METHOD DESIGNATING UNIT
1011
TRANSMISSION LINE DETERMINING UNIT
1012
LINE SELECTION CONTROL UNIT
1013
LINE TABLE
1014
ORDER INFORMATION INSERTION CONTROL UNIT
1015
ORDER NUMBER COUNTER
1016
1005
LINE CONTROL UNIT 1
LINE CONTROL UNIT 2
LINE CONTROL UNIT N
LINE 1
LINE 2
LINE N
1200
LINE CONTROL UNIT 1
LINE CONTROL UNIT 2
LINE CONTROL UNIT N
1105
1110
RECEPTION CONTROL UNIT
1118
RECEPTION ORDER CONTROL UNIT
1119
ORDER NUMBER COUNTER
1120
RECEPTION PROCESS TABLE
1121
RECEPTION PROCESS TIMER
1117
ORDER INFORMATION DELETION UNIT
LINE AGGREGATION COMMUNICATION PROTOCOL PROCESSING UNIT
1108
TRANSMISSION CONTROL UNIT
1109
ORDER INFORMATION INSERTION CONTROL UNIT
1115
ORDER NUMBER COUNTER
1116
LINE SELECTION CONTROL UNIT
1113
LINE TABLE
1114
TRANSMISSION LINE DETERMINING UNIT
1112
DISTRIBUTION METHOD DESIGNATING UNIT
1111
LINE AGGREGATION COMMUNICATION CONTROL UNIT
1107
PROTOCOL PROCESSING UNIT
1106
LAN CONTROLLER
1104
1103
STORAGE UNIT
CPU
1102
HOST B
1101

FIG. 2

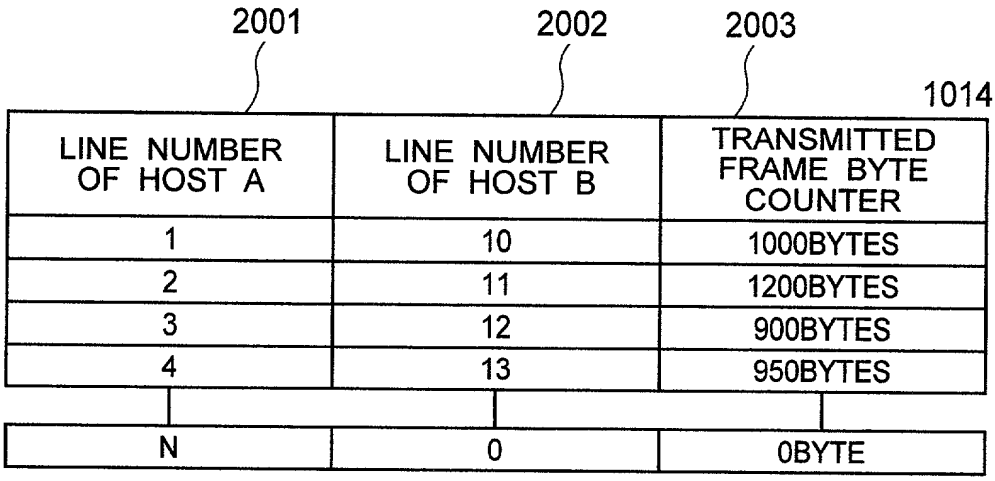


FIG. 3

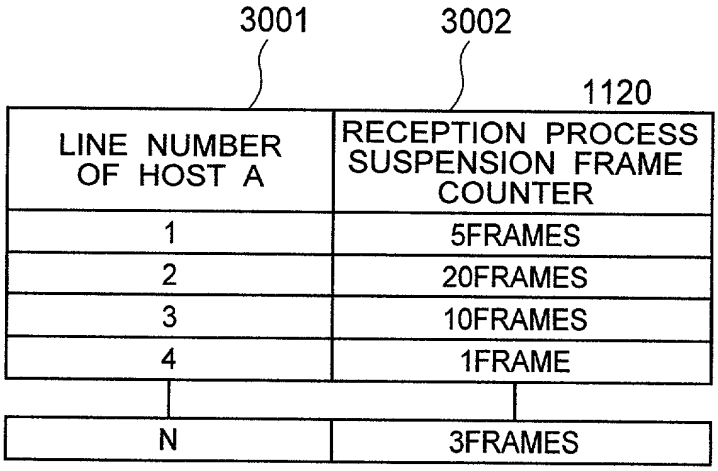


FIG. 4

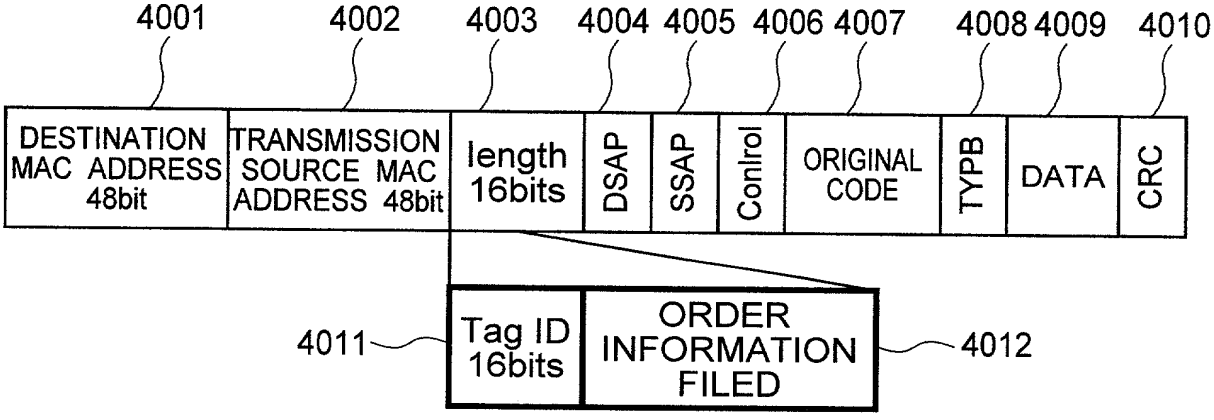


FIG. 5

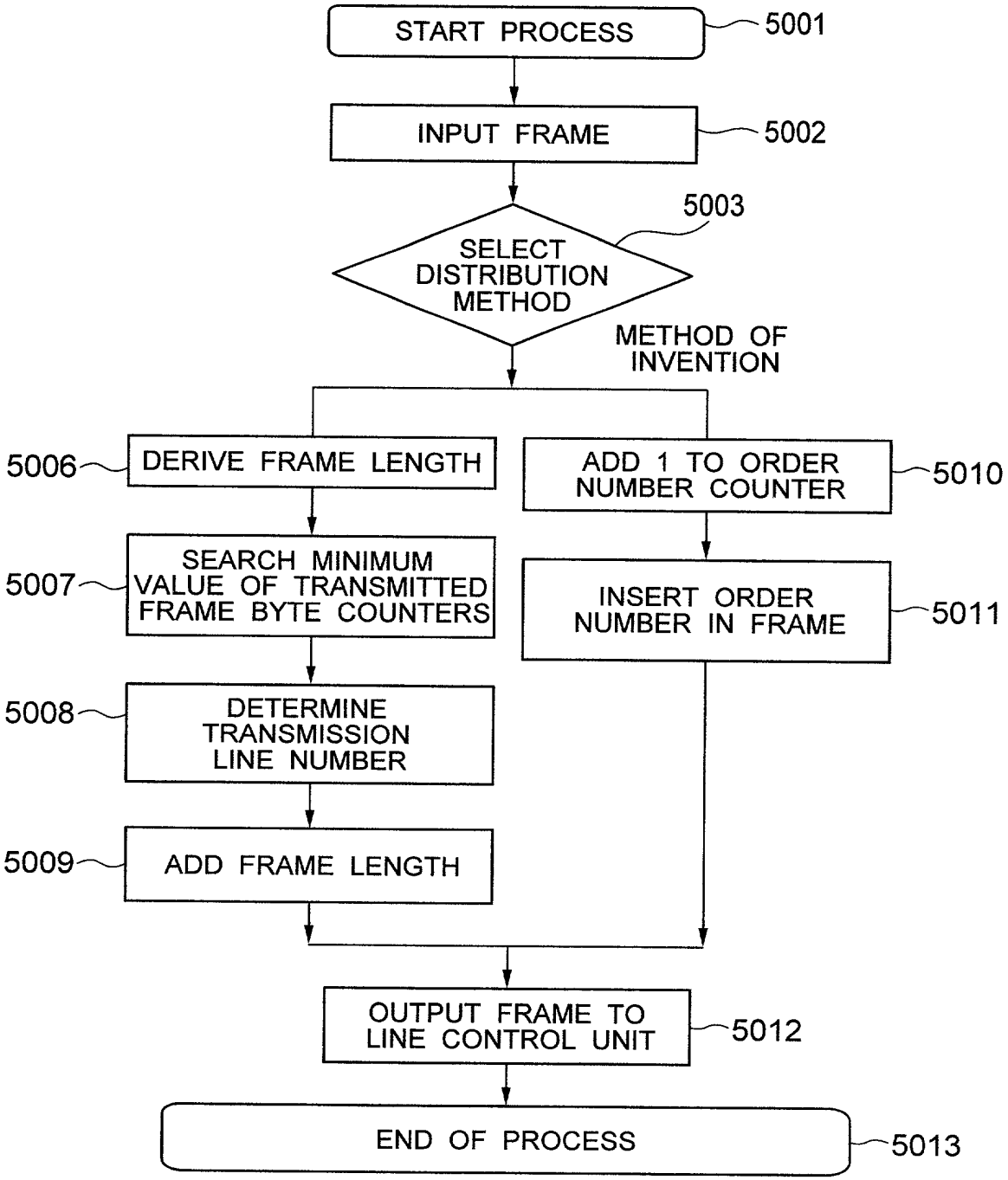

START PROCESS
5001
INPUT FRAME
5002
5003
SELECT DISTRIBUTION METHOD
METHOD OF INVENTION
5006
DERIVE FRAME LENGTH
5007
SEARCH MINIMUM VALUE OF TRANSMITTED FRAME BYTE COUNTERS
5008
DETERMINE TRANSMISSION LINE NUMBER
5009
ADD FRAME LENGTH
ADD 1 TO ORDER NUMBER COUNTER
5010
INSERT ORDER NUMBER IN FRAME
5011
OUTPUT FRAME TO LINE CONTROL UNIT
5012
END OF PROCESS
5013

FIG. 6

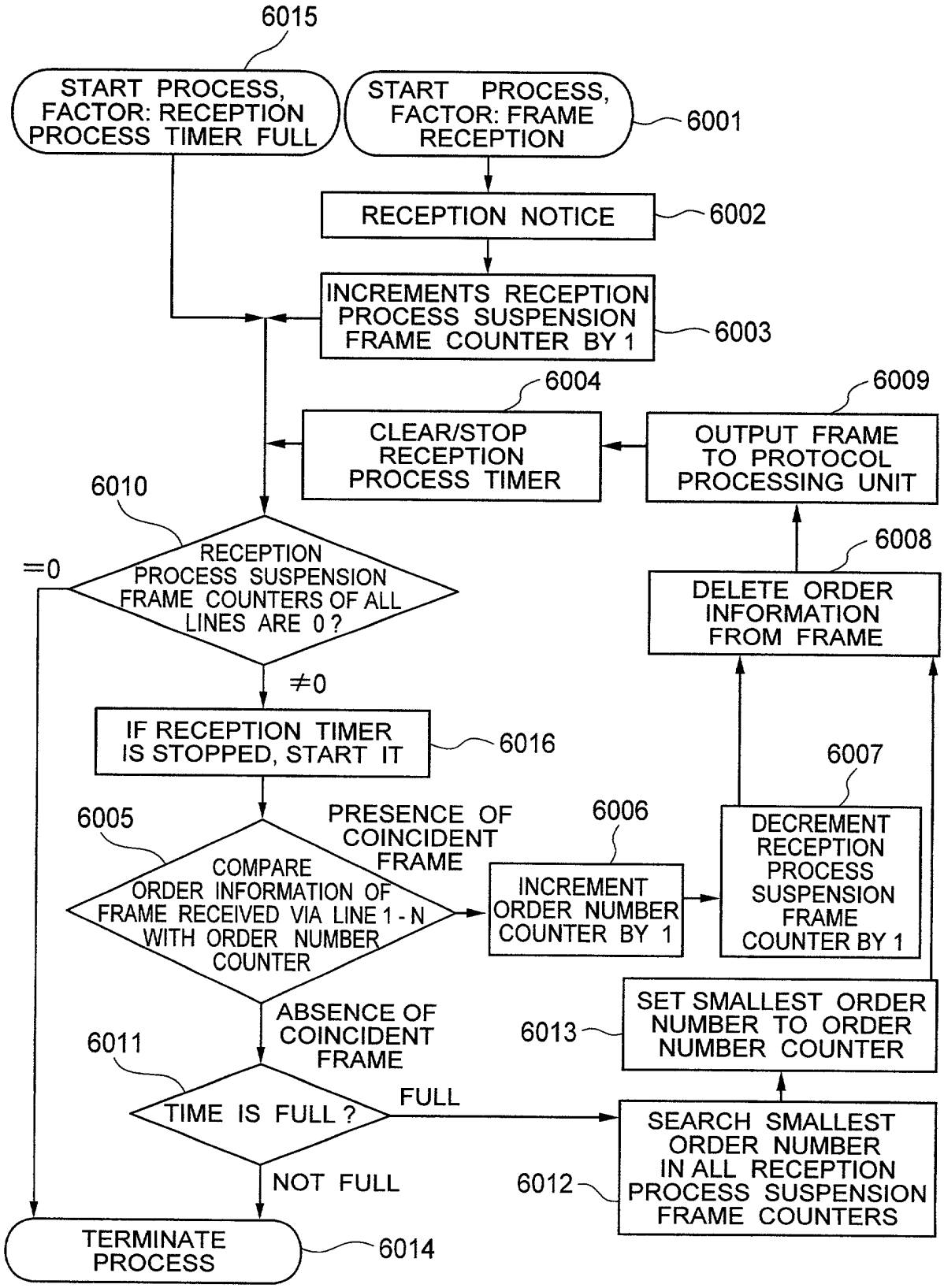

6015
START PROCESS, FACTOR: RECEPTION PROCESS TIMER FULL
START PROCESS, FACTOR: FRAME RECEPTION
6001
RECEPTION NOTICE
6002
INCREMENTS RECEPTION PROCESS SUSPENSION FRAME COUNTER BY 1
6003
6004
CLEAR/STOP RECEPTION PROCESS TIMER
6009
OUTPUT FRAME TO PROTOCOL PROCESSING UNIT
6010
RECEPTION PROCESS SUSPENSION FRAME COUNTERS OF ALL LINES ARE 0 ?
=0
≠0
6008
DELETE ORDER INFORMATION FROM FRAME
IF RECEPTION TIMER IS STOPPED, START IT
6016
6007
6005
PRESENCE OF COINCIDENT FRAME
6006
COMPARE ORDER INFORMATION OF FRAME RECEIVED VIA LINE 1 - N WITH ORDER NUMBER COUNTER
INCREMENT ORDER NUMBER COUNTER BY 1
DECREMENT RECEPTION PROCESS SUSPENSION FRAME COUNTER BY 1
SET SMALLEST ORDER NUMBER TO ORDER NUMBER COUNTER
6013
ABSENCE OF COINCIDENT FRAME
6011
TIME IS FULL ?
FULL
SEARCH SMALLEST ORDER NUMBER IN ALL RECEPTION PROCESS SUSPENSION FRAME COUNTERS
6012
NOT FULL
TERMINATE PROCESS
6014

FIG. 7

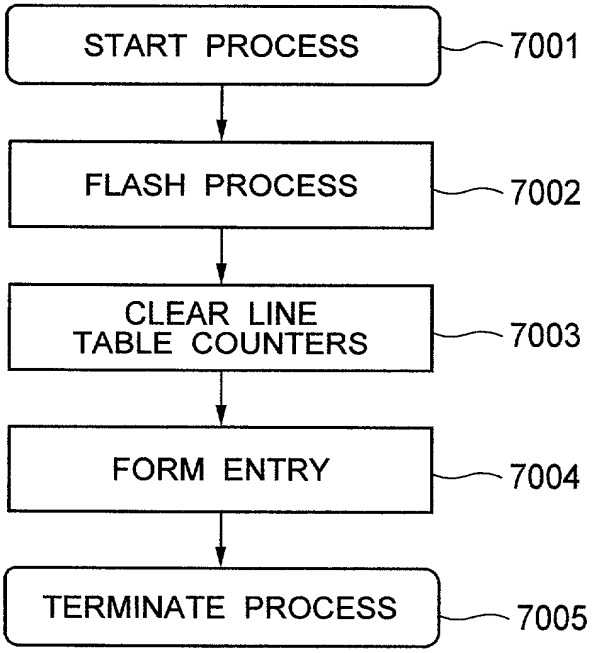

START PROCESS
7001
FLASH PROCESS
7002
CLEAR LINE TABLE COUNTERS
7003
FORM ENTRY
7004
TERMINATE PROCESS
7005

FIG. 8

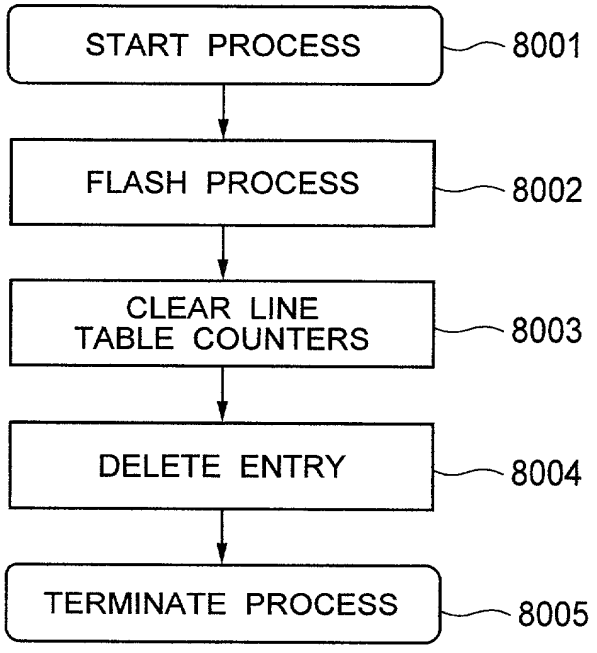

START PROCESS
8001
FLASH PROCESS
8002
CLEAR LINE TABLE COUNTERS
8003
DELETE ENTRY
8004
TERMINATE PROCESS
8005

FIG. 9

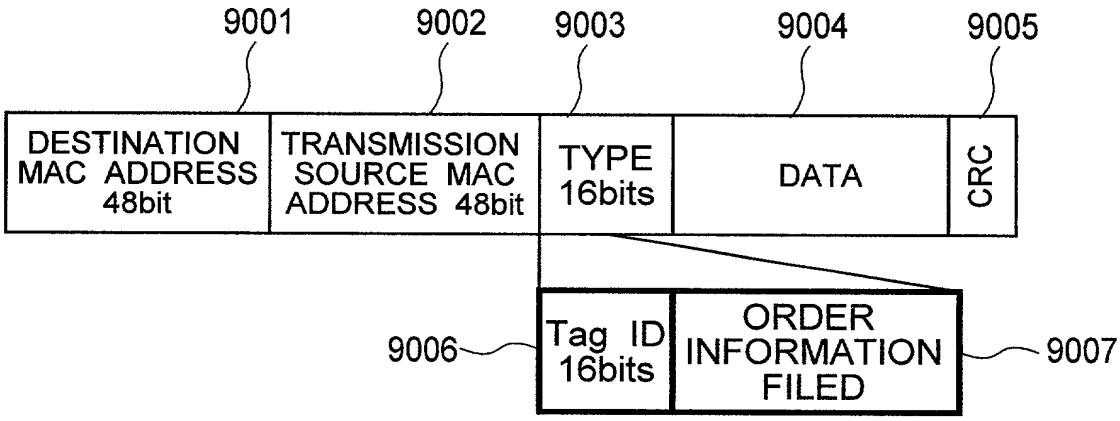

9001
9002
9003
9004
9005
DESTINATION MAC ADDRESS 48bit
TRANSMISSION SOURCE MAC ADDRESS 48bit
TYPE 16bits
DATA
CRC
9006
Tag ID 16bits
ORDER INFORMATION FILED
9007

FIG. 10

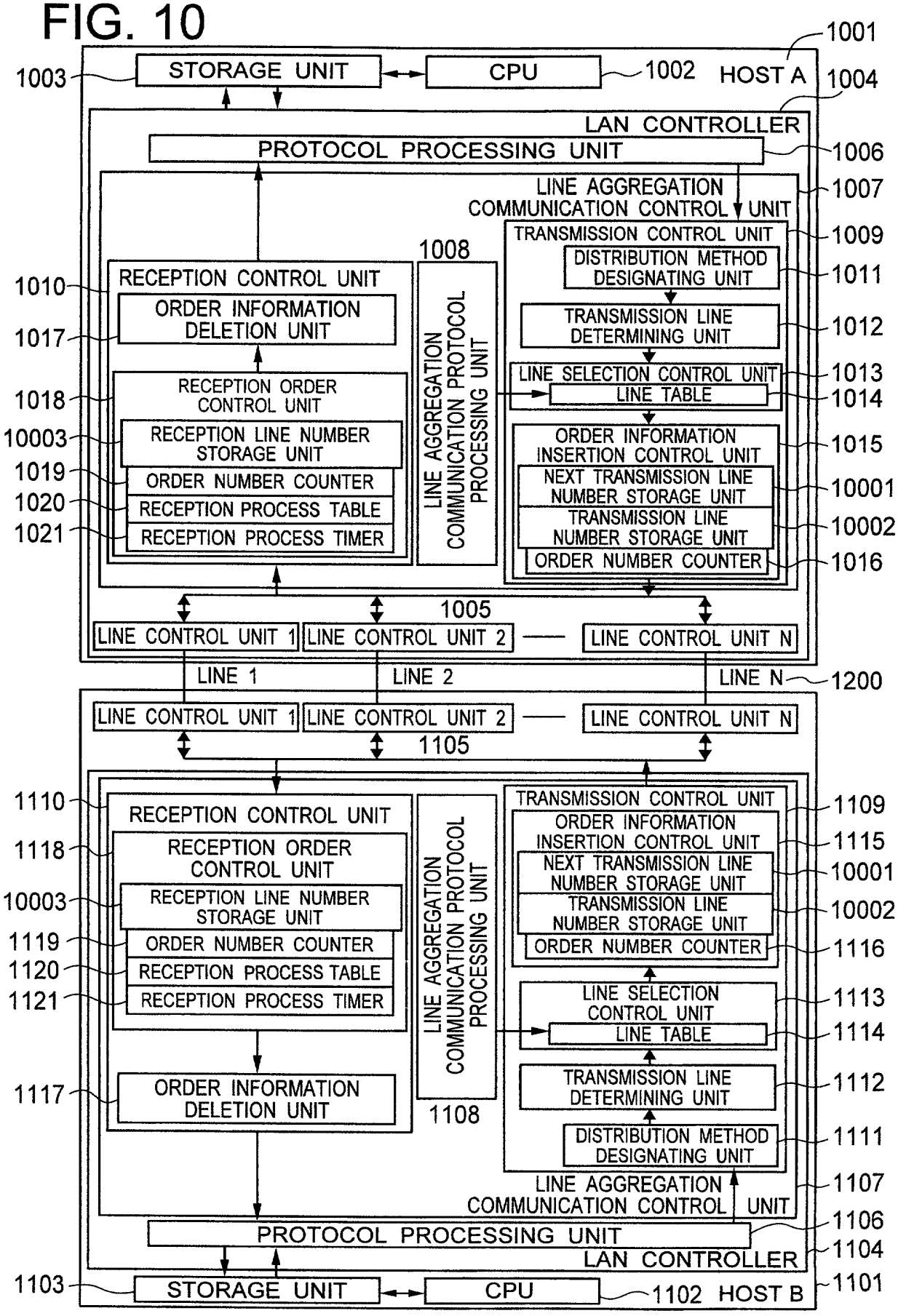

1001
HOST A
1003
STORAGE UNIT
CPU
1002
1004
LAN CONTROLLER
PROTOCOL PROCESSING UNIT
1006
LINE AGGREGATION COMMUNICATION CONTROL UNIT
1007
TRANSMISSION CONTROL UNIT
1009
1008
DISTRIBUTION METHOD DESIGNATING UNIT
1011
1010
RECEPTION CONTROL UNIT
TRANSMISSION LINE DETERMINING UNIT
1012
ORDER INFORMATION DELETION UNIT
1017
LINE SELECTION CONTROL UNIT
1013
LINE TABLE
1014
1018
RECEPTION ORDER CONTROL UNIT
LINE AGGREGATION COMMUNICATION PROTOCOL PROCESSING UNIT
ORDER INFORMATION INSERTION CONTROL UNIT
1015
10003
RECEPTION LINE NUMBER STORAGE UNIT
NEXT TRANSMISSION LINE NUMBER STORAGE UNIT
10001
1019
ORDER NUMBER COUNTER
TRANSMISSION LINE NUMBER STORAGE UNIT
10002
1020
RECEPTION PROCESS TABLE
ORDER NUMBER COUNTER
1016
1021
RECEPTION PROCESS TIMER
1005
LINE CONTROL UNIT 1
LINE CONTROL UNIT 2
LINE CONTROL UNIT N
LINE 1
LINE 2
LINE N
1200
LINE CONTROL UNIT 1
LINE CONTROL UNIT 2
LINE CONTROL UNIT N
1105
1110
RECEPTION CONTROL UNIT
TRANSMISSION CONTROL UNIT
1109
ORDER INFORMATION INSERTION CONTROL UNIT
1115
1118
RECEPTION ORDER CONTROL UNIT
NEXT TRANSMISSION LINE NUMBER STORAGE UNIT
10001
10003
RECEPTION LINE NUMBER STORAGE UNIT
TRANSMISSION LINE NUMBER STORAGE UNIT
10002
1119
ORDER NUMBER COUNTER
ORDER NUMBER COUNTER
1116
1120
RECEPTION PROCESS TABLE
LINE SELECTION CONTROL UNIT
1113
1121
RECEPTION PROCESS TIMER
LINE AGGREGATION COMMUNICATION PROTOCOL PROCESSING UNIT
LINE TABLE
1114
1117
ORDER INFORMATION DELETION UNIT
TRANSMISSION LINE DETERMINING UNIT
1112
1108
DISTRIBUTION METHOD DESIGNATING UNIT
1111
LINE AGGREGATION COMMUNICATION CONTROL UNIT
1107
PROTOCOL PROCESSING UNIT
1106
LAN CONTROLLER
1104
1103
STORAGE UNIT
CPU
1102
HOST B
1101

FIG. 11

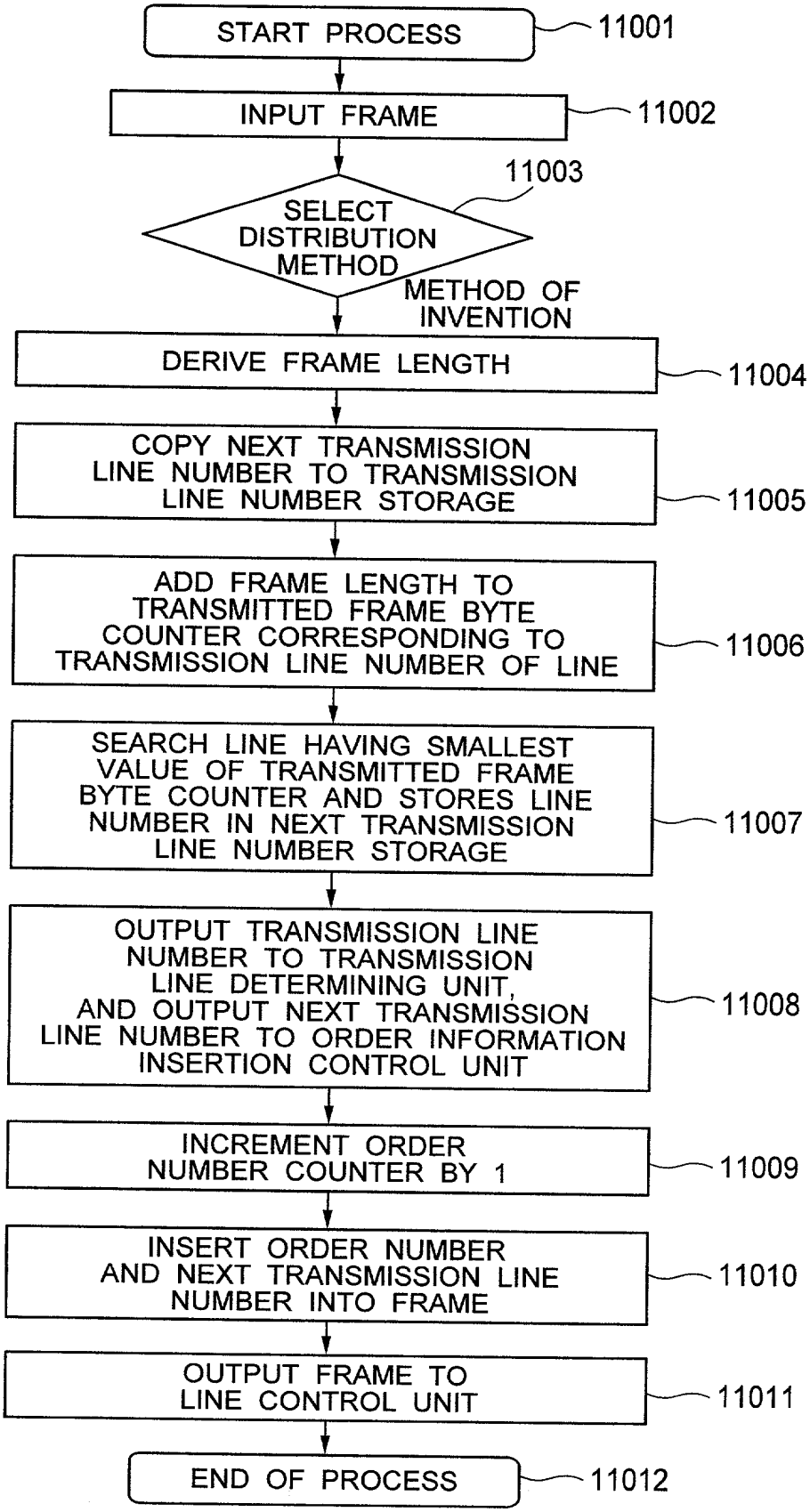

START PROCESS
11001
INPUT FRAME
11002
11003
SELECT DISTRIBUTION METHOD
METHOD OF INVENTION
DERIVE FRAME LENGTH
11004
COPY NEXT TRANSMISSION LINE NUMBER TO TRANSMISSION LINE NUMBER STORAGE
11005
ADD FRAME LENGTH TO TRANSMITTED FRAME BYTE COUNTER CORRESPONDING TO TRANSMISSION LINE NUMBER OF LINE
11006
SEARCH LINE HAVING SMALLEST VALUE OF TRANSMITTED FRAME BYTE COUNTER AND STORES LINE NUMBER IN NEXT TRANSMISSION LINE NUMBER STORAGE
11007
OUTPUT TRANSMISSION LINE NUMBER TO TRANSMISSION LINE DETERMINING UNIT, AND OUTPUT NEXT TRANSMISSION LINE NUMBER TO ORDER INFORMATION INSERTION CONTROL UNIT
11008
INCREMENT ORDER NUMBER COUNTER BY 1
11009
INSERT ORDER NUMBER AND NEXT TRANSMISSION LINE NUMBER INTO FRAME
11010
OUTPUT FRAME TO LINE CONTROL UNIT
11011
END OF PROCESS
11012

FIG. 12

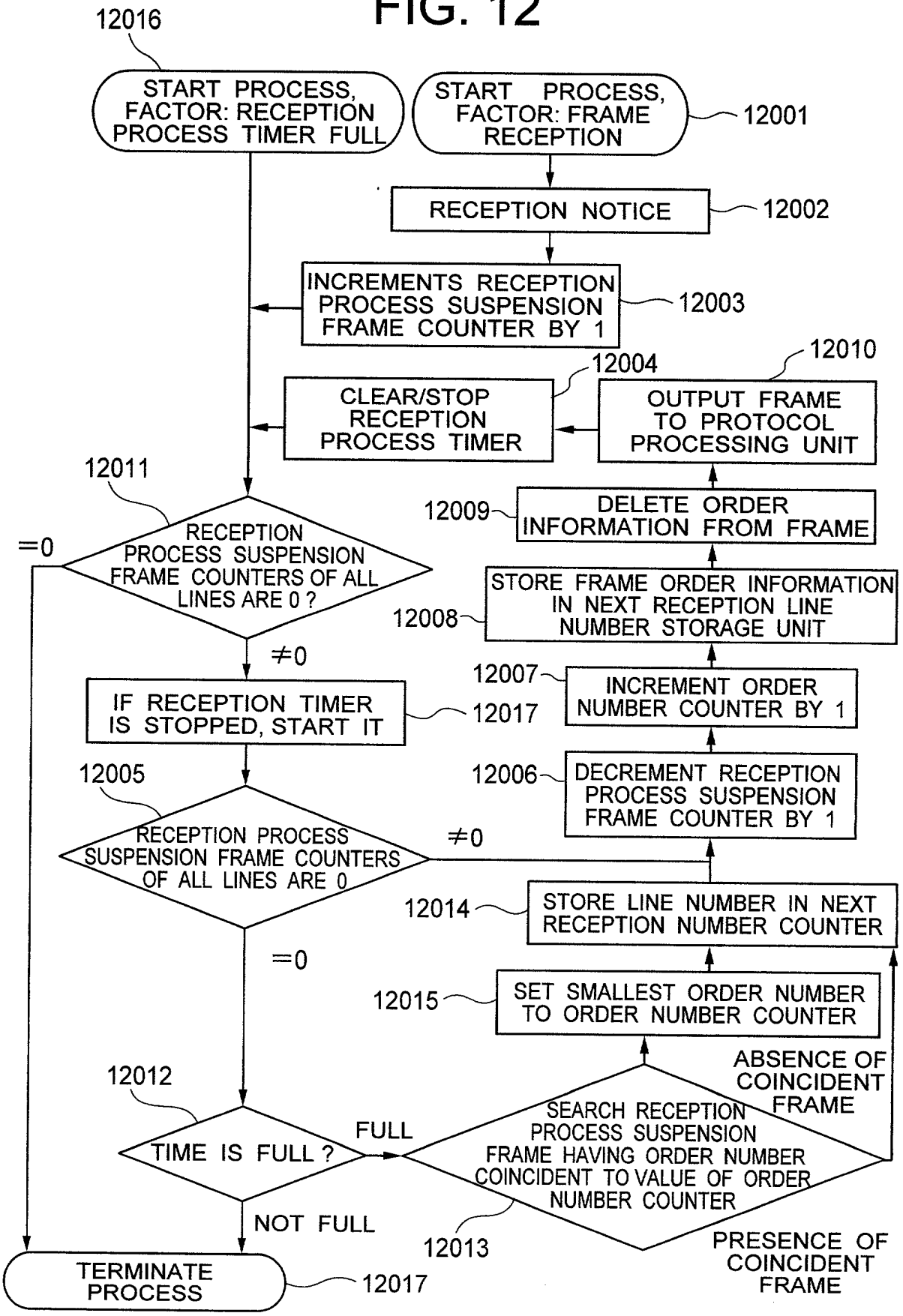

12016
START PROCESS, FACTOR: RECEPTION PROCESS TIMER FULL
START PROCESS, FACTOR: FRAME RECEPTION
12001
RECEPTION NOTICE
12002
INCREMENTS RECEPTION PROCESS SUSPENSION FRAME COUNTER BY 1
12003
12004
CLEAR/STOP RECEPTION PROCESS TIMER
12010
OUTPUT FRAME TO PROTOCOL PROCESSING UNIT
12011
RECEPTION PROCESS SUSPENSION FRAME COUNTERS OF ALL LINES ARE 0 ?
=0
≠0
12009
DELETE ORDER INFORMATION FROM FRAME
12008
STORE FRAME ORDER INFORMATION IN NEXT RECEPTION LINE NUMBER STORAGE UNIT
12007
INCREMENT ORDER NUMBER COUNTER BY 1
IF RECEPTION TIMER IS STOPPED, START IT
12017
12006
DECREMENT RECEPTION PROCESS SUSPENSION FRAME COUNTER BY 1
12005
RECEPTION PROCESS SUSPENSION FRAME COUNTERS OF ALL LINES ARE 0
≠0
12014
STORE LINE NUMBER IN NEXT RECEPTION NUMBER COUNTER
=0
12015
SET SMALLEST ORDER NUMBER TO ORDER NUMBER COUNTER
ABSENCE OF COINCIDENT FRAME
12012
TIME IS FULL ?
FULL
SEARCH RECEPTION PROCESS SUSPENSION FRAME HAVING ORDER NUMBER COINCIDENT TO VALUE OF ORDER NUMBER COUNTER
NOT FULL
12013
PRESENCE OF COINCIDENT FRAME
TERMINATE PROCESS
12017

FIG. 13

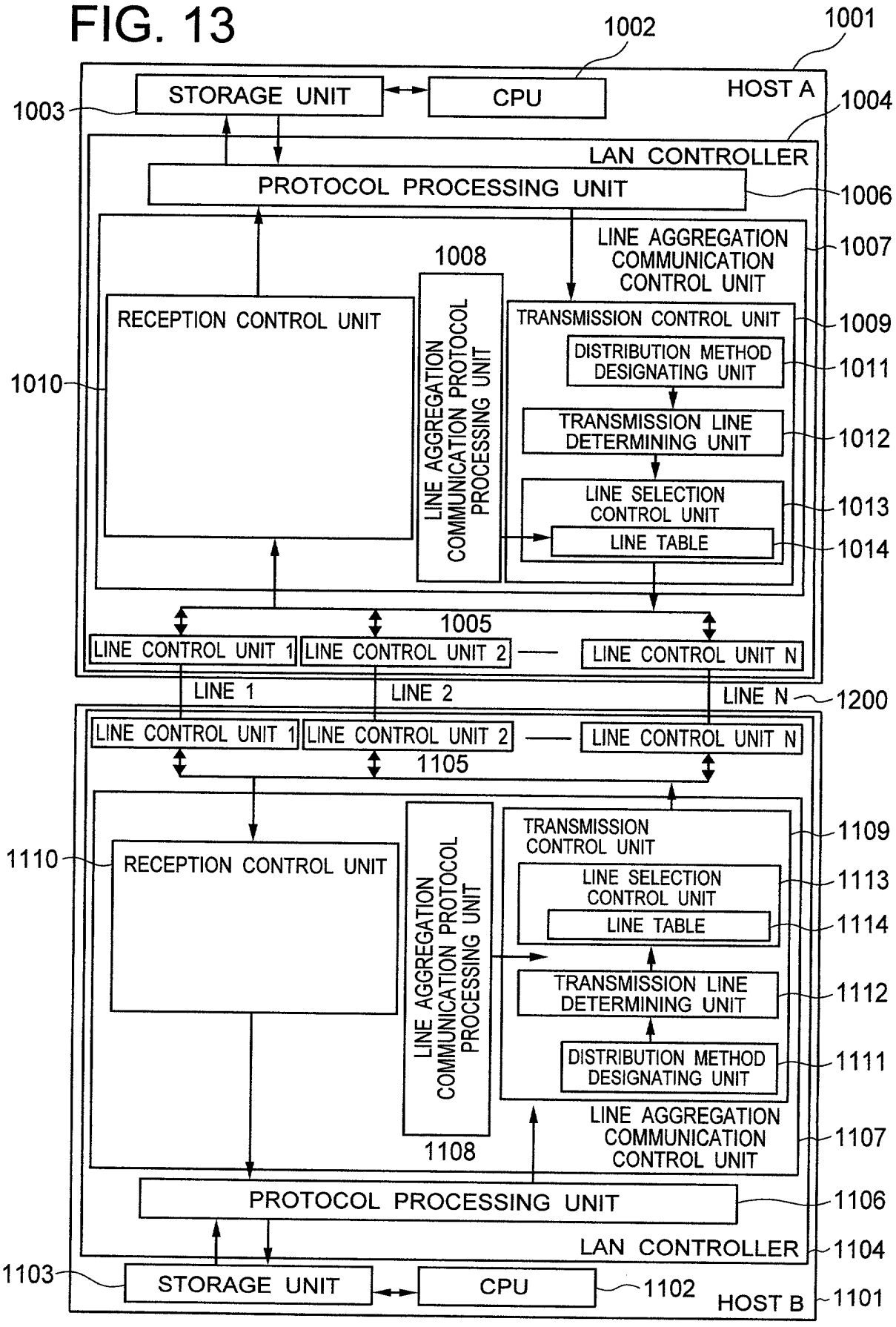

1002
1001
STORAGE UNIT
CPU
HOST A
1003
1004
LAN CONTROLLER
PROTOCOL PROCESSING UNIT
1006
LINE AGGREGATION COMMUNICATION CONTROL UNIT
1007
1008
RECEPTION CONTROL UNIT
LINE AGGREGATION COMMUNICATION PROTOCOL PROCESSING UNIT
TRANSMISSION CONTROL UNIT
1009
DISTRIBUTION METHOD DESIGNATING UNIT
1011
1010
TRANSMISSION LINE DETERMINING UNIT
1012
LINE SELECTION CONTROL UNIT
1013
LINE TABLE
1014
1005
LINE CONTROL UNIT 1
LINE CONTROL UNIT 2
LINE CONTROL UNIT N
LINE 1
LINE 2
LINE N
1200
LINE CONTROL UNIT 1
LINE CONTROL UNIT 2
LINE CONTROL UNIT N
1105
TRANSMISSION CONTROL UNIT
1109
1110
RECEPTION CONTROL UNIT
LINE SELECTION CONTROL UNIT
1113
LINE TABLE
1114
LINE AGGREGATION COMMUNICATION PROTOCOL PROCESSING UNIT
TRANSMISSION LINE DETERMINING UNIT
1112
DISTRIBUTION METHOD DESIGNATING UNIT
1111
LINE AGGREGATION COMMUNICATION CONTROL UNIT
1107
1108
PROTOCOL PROCESSING UNIT
1106
LAN CONTROLLER
1104
1103
STORAGE UNIT
CPU
1102
HOST B
1101

FIG. 14

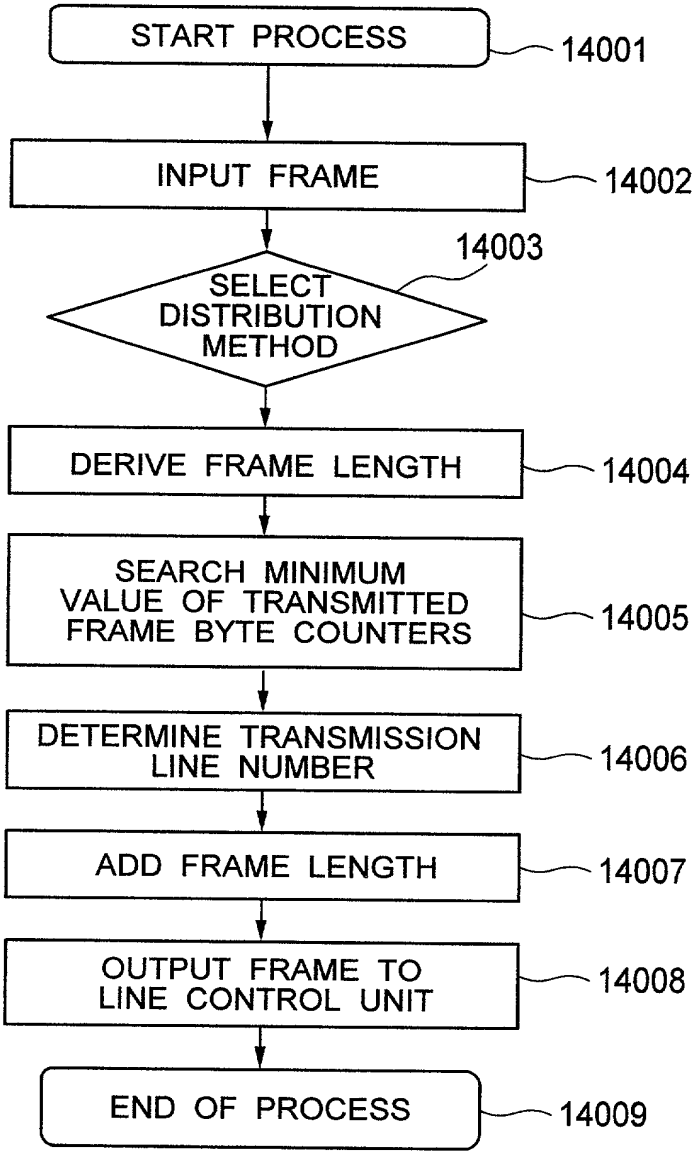
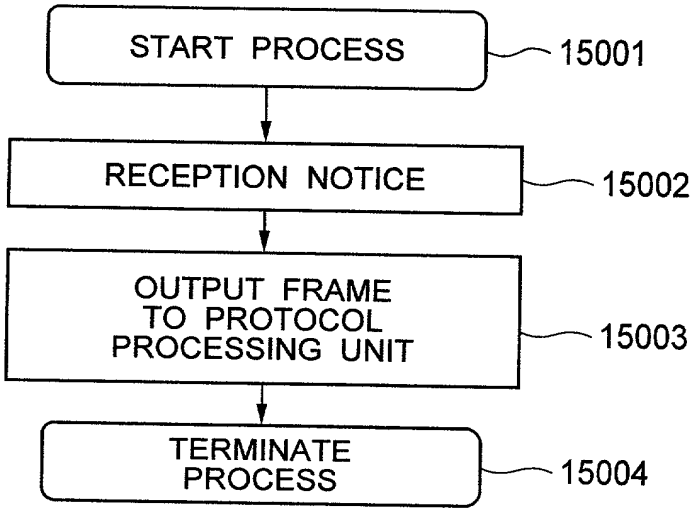

START PROCESS
14001
INPUT FRAME
14002
14003
SELECT DISTRIBUTION METHOD
DERIVE FRAME LENGTH
14004
SEARCH MINIMUM VALUE OF TRANSMITTED FRAME BYTE COUNTERS
14005
DETERMINE TRANSMISSION LINE NUMBER
14006
ADD FRAME LENGTH
14007
OUTPUT FRAME TO LINE CONTROL UNIT
14008
END OF PROCESS
14009

FIG. 15


START PROCESS
15001
RECEPTION NOTICE
15002
OUTPUT FRAME TO PROTOCOL PROCESSING UNIT
15003
TERMINATE PROCESS
15004